INV4437

2626

Instruction Manual

Conditioning Amplifier Type 2626

A mains powered, low noise, charge amplifier for use with piezoelectric accelerometers and other pizoelectric transducers. Accurate 3 digit conditioning networks permit dial-in of exact transducer charge sensitivity giving unified output ratings from 0,001 to 10 Volt per measurement unit, selectable in decade steps. It is suitable for transducer calibration and for general purpose measurements. Direct and transformer coupled outputs are provided which help to eliminate transducer ground loop problems.

MP MASTER
MA23222

Brüel & Kjær

Digitized by the Internet Archive
in 2025

https://archive.org/details/manualsplus_10322

CONDITIONING AMPLIFIER
TYPE 2626

Applicable to instruments from
serial no. 825073

Revision November 1986

SAFETY CONSIDERATIONS

This apparatus has been designed and tested according to Class II of IEC Publication 348, Safety Requirements for Electronic Measuring Apparatus, and has been supplied in safe condition. The present Instruction Manual contains information and warnings which should be followed by the user to ensure safe operation and to retain the apparatus in safe condition. Special note should be made of the following:

APPLICATION OF POWER

Before each use of the apparatus, check that it is set to match the available mains voltage and that the correct fuse is installed.

SAFETY SYMBOLS

⚠ The apparatus will be marked with this symbol when it is important that the user refer to the associated warning statements given in the Instruction Manual.

⊥ Chassis terminal ⏚ Safety earth terminal ⚡ Hazardous voltage

WARNINGS

Set all instruments to power off before connecting or disconnecting interface cables.

Whenever it is likely that the correct function or operating safety of the apparatus has been impaired, the apparatus must be made inoperative and secured against unintended operation.

Any adjustment, maintenance, and repair of the open apparatus under voltage must be avoided as far as possible and, if unavoidable, must be carried out only by trained service personnel.

CONTENTS

1. INTRODUCTION AND SPECIFICATIONS (PRODUCT DATA) **1**

2. CONTROLS **3**

2.1. FRONT PANEL 3
2.2. REAR PANEL 4

3. OPERATION **6**

3.1. PRELIMINARY 6
Environment 6
Connection of Mains Supply 6
Mains Fuse 7
Grounding Considerations 7
3.2. MEASUREMENT PROCEDURE 8

4. CHARACTERISTICS **12**

4.1. GAIN 12
4.2. FREQUENCY AND PHASE 12
4.3. INFLUENCE OF CAPACITATIVE LOADING 13
4.4. NOISE AND DYNAMIC RANGE 14

5. SERVICE AND REPAIR **16**

Conditioning Amplifier

FEATURES:

- Charge input
- 3 digit conditioning to transducer sensitivity
- Unified output ratings for simplified system calibration
- High sensitivity up to 1000 mV/pC
- Direct and Transformer coupled output modes
- Switchable low and high frequency limits

USES:

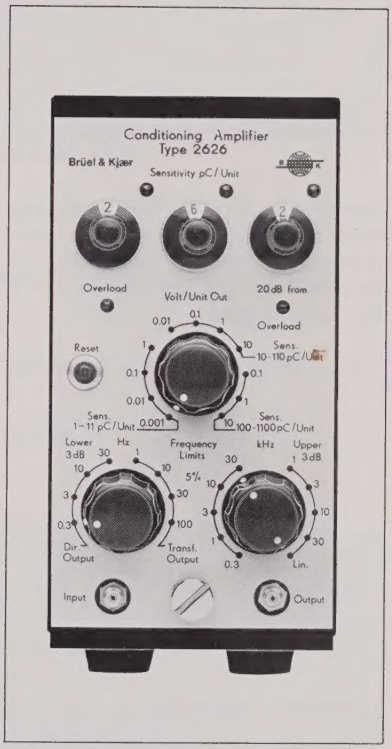
- General purpose vibration measurements with piezoelectric accelerometers
- Signal conditioning in vibration test control set-ups
- Multi-purpose signal conditioning amplifier for piezoelectric transducers
- Comparison calibration of piezoelectric transducers

Conditioning Amplifier Type 2626 is a low noise charge amplifier for use with piezoelectric accelerometers and other piezoelectric measurement transducers. It enables long transducer connection cables to be used without affecting the charge sensitivity of transducers and offers a wide range of signal conditioning facilities that make it ideal for use with accelerometers in calibration set-ups, as well as in set-ups for general purpose vibration measurements.

A block diagram of the 2626 is shown in Fig.1. The amplifier features precision conditioning networks for 3 digit dial-in on the Amplifier of exact transducer charge sensitivities ranging from 1,0 to 1099 pC/measurement unit. These condition the sensitivity of the transducer and Amplifier combination giving unified output ratings from 0,001 to 10 V/measurement unit, which may be selected in accurate decade steps. This feature greatly simplifies the calibration and reading of a measuring system, especially when using transducers which have "odd" sensitivity values, i.e. non Uni-Gain types. With transducers having a source capacitance of 1 nF the maximum overall gain of the Amplifier is 60 dB.

For suppression of noise and other spurious signals, the 2626 has adjustable high and low pass filters built-in. These may be used to limit the basic 0,3 Hz to 100 kHz (—3 dB) frequency range of the Amplifier and are active filters with attenuation slopes of 20 and 40 dB/decade respectively. The filter switch positions marked on the front panel give the 5% as well as 3 dB frequency limits.

In addition to the standard B & K miniature input and output sockets on the front panel, there is an alternative miniature input socket and



BNC output socket on the rear of the 2626. "Direct" as well as "Transformer" coupled output modes may be selected, the latter being of particular benefit in prevention of signal ground loops and when using the 2626 in the feedback loop of vibration exciter control systems. The "20 dB from Overload" and "Overload" signal level indicator lamps which are connected to the outputs, help in selecting a

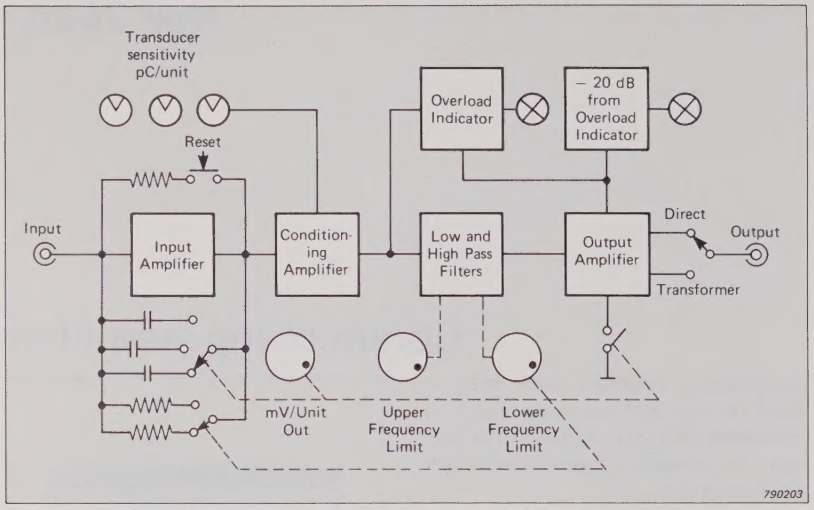


Fig.1. Block diagram of Type 2626

unified output rating that gives optimum signal to noise ratio for measurements. Power for the 2626 may be provided from any 100 to 240 V AC mains supply.

Type 2626 is available separately or, for use in piezoelectric accelerometer calibration set-ups, can be obtained in the calibration Set Type 3506 which also includes a B & K Reference Accelerometer Type 8305. See B & K Short and Main Catalogues for details.

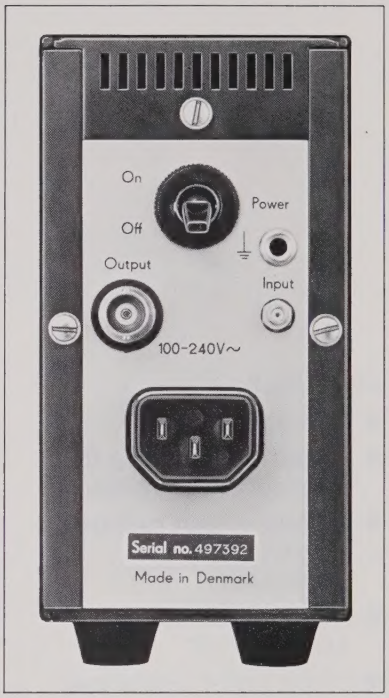


Fig.2. Rear Panel of Type 2626

Specifications 2626

CHARGE INPUT:
Via 10-32 NF miniature coaxial socket
Max. Input: $\sim 10^5$ pC

SENSITIVITY CONDITIONING:
3 digit dial-in of transducer sensitivity from 1,0 to 1099 pC/unit

AMPLIFIER SENSITIVITY:
0,1 to 1000 mV/pC corresponding to –20 to +60 dB with transducer capacitance of 1 nF

CALIBRATED OUTPUT RATINGS:
0,001 to 10 V/unit selectable in 20 dB steps

ACCURACY:
For two lower V/UNIT OUT settings of each transducer range: ±0,5% at 1 kHz increasing to ±1% at 10 kHz for input loads less than 60 nF and 20 nF respectively. 1% change in gain for input loads of ~200nF and ~100 nF respectively
For other V/UNIT OUT settings: ±1% at 1 kHz increasing to ±2% at 10 kHz for input loads less than 6 nF. 1% change in gain for input loads of ~15 nF

SIGNAL OUTPUT:
Choice of "Direct" and "Transformer" coupled outputs via 10-32 NF and BNC coaxial socket
"Direct":
Max. Output: 10 V (10 mA) peak from 0,3 Hz to 30 kHz
DC Offset: ±10 mV max.
Output Impedance: <1 Ω at frequencies up to 10 kHz for all V/UNIT OUT settings except the highest in each transducer range where it is <10 Ω
"Transformer":
Max. Output: 10 V (10 mA) peak from 40 Hz to 30 kHz. Below 40 Hz the output voltage is reduced by 20 dB/decade so that at 1 Hz it is 0,2 V peak
DC Offset: zero
Output Impedance: 12 Ω for all V/UNIT OUT settings except the highest in each transducer range where it is 22 Ω

FREQUENCY RANGE:
0,3 Hz to 100 kHz

LOW-PASS FILTER:
Switchable –3 dB upper frequency limits of 1 kHz, 3 kHz, 10 kHz, 30 kHz and Lin ~100 kHz with attenuation slope of 40 dB/decade

HIGH-PASS FILTER:
Switchable –3 dB lower frequency limits of 0,3 Hz, 1 Hz, 3 Hz, 10 Hz and 30 Hz with attenuation slope of 20 dB/decade

DISTORTION: <1%

INHERENT NOISE (2 Hz to 22 kHz)
$5\ 10^{-3}$ pC referred to input with maximum sensitivity and 1 nF transducer capacitance

LEVEL INDICATORS
"Overload" LED lights when input or output level exceeds 10 V peak
"20 dB from Overload" LED lights when output level is between 1 and 10 V peak

RISE TIME: ~2,5 V/μs

RECOVERY TIME: <200 μs

ENVIRONMENTAL CONDITIONS:
Temperature Range: –10 to +55°C (+14 to 131°F)
Humidity: 0 to 90% RH (non-condensing). For use in high humidities a 3 W heater may be fitted on special order

POWER REQUIREMENTS:
100 to 240 V (50 to 400 Hz) ±10% AC. 7 VA. Complies with Safety Class I of IEC 348

DIMENSIONS:
Height: 132,6 mm (5,22 in)
Width: 69,5 mm (2,74 in)
Depth: 200 mm (7,87 in)
B & K module cassette KK 0022, 2/12 of 19 in rack module

WEIGHT: 1,75 kg (3,89 lb)

ACCESSORIES INCLUDED:
1 × Power Cable ..... AN 0010
1 × 50 mA Fuse ..... VF 0016

2. CONTROLS

2.1. FRONT PANEL

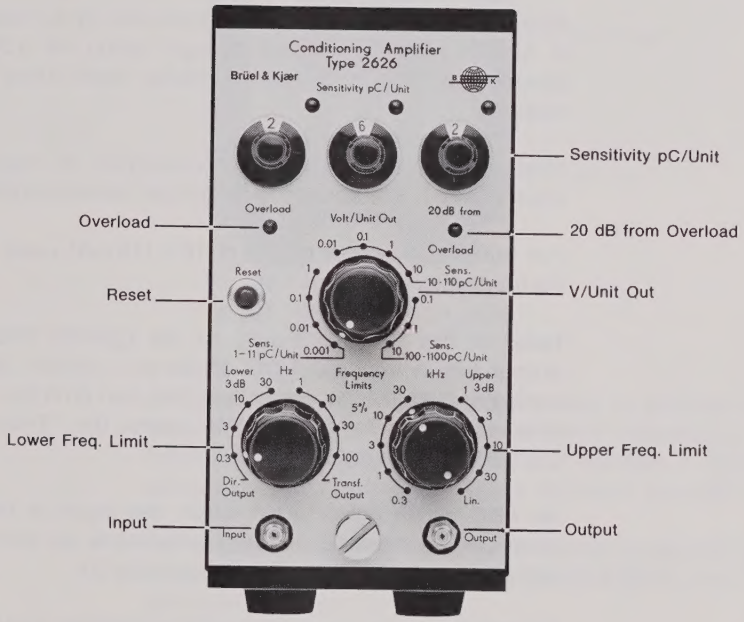


Fig. 2.1. Front Panel of 2626

SENSITIVITY pC/UNIT:

Three knobs to "dial-in" the transducer charge sensitivity, in three ranges selected by the V/UNIT OUT control. The ranges are:

1,00 to 10,99 pC/measurement unit.
10,0 to 109,9 pC/measurement unit.
100 to 1099 pC/measurement unit.

The decimal point is indicated by one of the three LED (Light Emitting Diodes) above the knobs.

VOLT/UNIT OUT:

Eleven position switch to select the amplifier output ratings from 0,001 to 10 Volt/measurement unit.

LOWER FREQ. LIMIT:

Selects the –3 db lower frequency limit in "Direct" mode, or the corresponding –5% lower frequency limit in "Transformer" mode.

"Direct": –3 db lower frequency limit 0,3, 3, 10 or 30 Hz.

"Transf.": –5% lower frequency limit 1, 10, 30 or 100 Hz.

At frequencies below the selected limit the attenuation slope is 20 dB/decade.

UPPER FREQ. LIMIT:

Selects the –3 db upper frequency limit in "Direct" mode, or the corresponding –5% upper frequency limit in "Transformer" mode.

"Direct": –3 db upper frequency limit 1, 3, 10, 30 or > 100 Hz (Lin.).

"Transf.": –5% upper frequency limit 0,3, 1, 3, 10 or 30 kHz.

At frequencies above the selected limit the attenuation slope is 40 dB/decade.

INPUT:

Miniature coaxial socket for connection of a measurement transducer. It has a maximum input charge rating of 100 nC, and accepts a Brüel & Kjær miniature accelerometer cable fitted with a Microdot connector.

OUTPUT:

Miniature coaxial socket for connection of measuring and analyzing equipment. It will accept Brüel & Kjær accelerometer cables.

For maximum output signal of 10 V (10 mA) peak the output should not be loaded by less than 1 kΩ.

Note: In the "Direct" mode, of the LOWER FREQ. LIMIT switch, the output has a maximum DC offset of ±10 mV. With DC-coupled measuring and analyzing equipment this can limit the dynamic range of the measurements. To prevent this, select the "Transformer" mode of the LOWER FREQ. LIMIT switch.

OVERLOAD:

An LED which lights when either the input or the output exceed 10 V peak. It will respond to peak overloads as short as 10 μs, and once activated remains lit for approximately 2 s.

RESET:

A push-button to restore normal operating conditions after overload. This is very useful when making low frequency shock measurements. For normal overloads the reset time is negligible.

20 dB FROM OVERLOAD:

An LED which lights when the output level exceeds 1 V peak (–20 dB refered to 10 V peak).

2.2. REAR PANEL

POWER:

"On"/"Off" switch for mains power. Power-on is indicated by one of the decimal place LEDs above the SENSITIVITY pC/UNIT knobs.

MAINS INPUT:

Input socket accepting the power cable AN 0010 provided for connection of an AC mains supply. To fit a suitable plug to the cable see section 3.1.1.

Any line voltage between 100 and 240 V, 50 to 400 Hz AC can be used. The maximum power consumption is 7 VA.

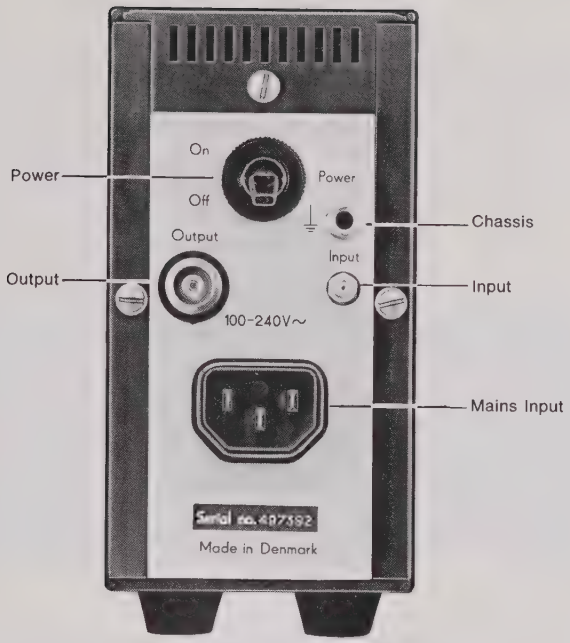


Fig. 2.2. Rear Panel of 2626

INPUT:

An alternative input socket, connected in parallel with the front panel input, for connection of a measurement transducer. It has a maximum input charge rating of 100 nC, and accepts a Brüel & Kjær miniature accelerometer cable fitted with a Microdot connector.

OUTPUT:

An alternative output socket, connected in parallel with the front panel output. It accepts a BNC plug (Brüel & Kjær stock no. JP 0035) or a Microdot Adaptor (JP 0052).

CHASSIS:

A 4 mm socket for connection of chassis to ground. It accepts a "banana" plug JP 0002. For "Grounding Considerations" see section 3.1.4.

WARNING: The 2626 is designed to operate with its signal-ground lines and chassis at earth potential. The signal-ground terminals, socket-screens or chassis must not float at any other potential, this could cause damage to the 2626 and other instruments connected to it.

3. OPERATION

3.1. PRELIMINARY

3.1.1. Environment

Conditioning Amplifier Type 2626 may be used over a wide temperature range extending from –10 to +55°C (14 to 130°F). On special order the 2626 can be fitted with a small 3 W heating element for use in high humidity environments. The heating element helps to prevent the build-up of condensation which could introduce low frequency noise.

3.1.2. Connection of Mains Supply

The 2626 can be powered from any single phase AC mains supply, from 100 to 240 V (50 to 400 Hz), without any voltage-setting adjustments. Connection of a suitable mains plug to the power cable AN 0010 (provided) is shown in Fig. 3.1. For safety, the protective (green/yellow) conductor of the power cable must be connected to the protective-earth contact of a mains-outlet socket. The use of extension cables without protective-conductors is to be avoided.

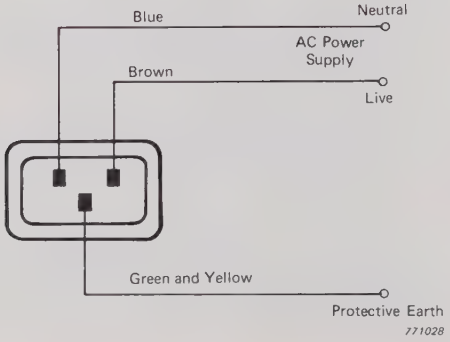


Fig. 3.1. Connection of mains supply to POWER INPUT socket

Note: In countries where no protective-earth contact is provided, the mains supply must incorporate an authorised earth-leakage current circuit-breaker.

3.1.3. Mains Fuse

The 2626 is fitted with a 50 mA, slow blow, fuse (Brüel & Kjær no. VF 0016). The fuse holder, shown in Fig. 3.2, is accessible on removing the bottom panel of the 2626. Always ensure that the amplifier is disconnected from the mains supply before the panel is removed. The panel can be released by rotating the locking screw, at the front of the amplifier, half a turn counter clockwise. Only fuses with the required rated current, and of the specified type, are to be used for replacement. The use of repaired fuses and the short circuiting of fuse holders is prohibited.

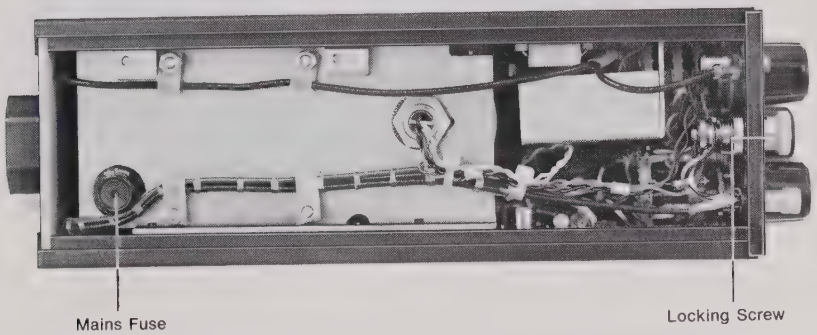


Fig. 3.2. Fuse holder containing mains fuse of the 2626

3.1.4. Grounding Considerations

Hum pick-up by ground-loops can cause considerable measurement inaccuracies. To prevent this it is essential that the 2626 and other instruments with which it is used are properly grounded. This can be done as follows:

1. If the casing of the measurement transducer is connected to signal-ground, as in the case of many vibration transducers, then isolate it from ground at the measurement point.

2. Connect the signal-ground lines of all instruments together. This is automatically done through the screens of the coaxial cables connecting the input and output sockets of the instruments.

3. Ensure that the signal-ground of all instruments not equipped with a mains input chassis-terminal are connected to chassis.

4. Ensure that the chassis of the 2626, and all other instruments equipped with a mains input chassis-terminal, are connected to mains-ground.

Operation of 2626 in "Direct" mode

5. Connect signal-ground to mains-ground on one and only one of the instruments, preferably on the 2626 which is the instrument nearest the measuring source.

6. If the signal-ground/mains-ground connection is not being made at the 2626, then disconnect its signal-ground from chassis, see below.

Operation of 2626 in "Transformer" mode

7. Ensure that the signal-ground of the 2626 is connected via chassis to mains-ground.

   Note: The use of "Trasnsformer" mode isolates the the output signal-ground of the 2626 from mains-ground. In this case only, a further signal-ground to mains-ground connection should be made.

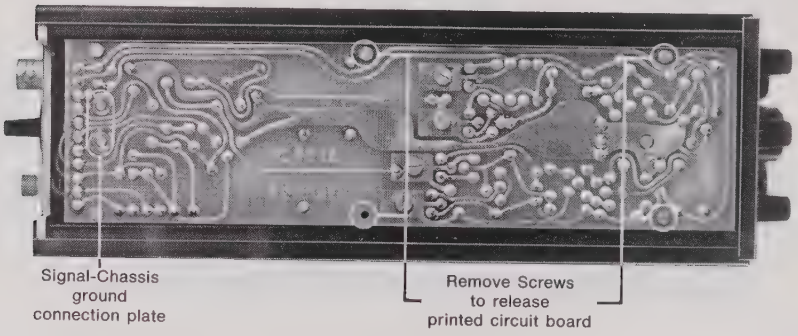


Fig. 3.3. Signal ground-chassis connection of the 2626

The 2626 is delivered with its signal-ground connected to chassis. To comply with the above requirements, it may be necessary to disconnect signal-ground from chassis. To do this first ensure that the 2626 is disconnected from the mains supply, and then remove the connection-plate shown in Fig. 3.3. The connection-plate is located on the reverse side of the printed-circuit board under the top panel of the 2626.

3.2. MEASUREMENT PROCEDURE

The amplifier output ratings, obtained with 3 digit dial-in of transducer charge-sensitivity, are accurate to within 0,5%*.

1. Carry out the preliminary adjustments in section 3.1.

2. Connect a suitable mains supply to the POWER INPUT socket of the 2626.

3. Set the POWER switch to "On". One of the indicator lamps above the SENSITIVITY pC/UNIT knobs will light to indicate that the 2626 is powered.

4. Connect the INPUT socket of a voltmeter, measuring-amplifier or frequency-analyzer to one of the two OUTPUT sockets of the 2626.

5. Calibrate the indicating instrument for non-selective (linear mode) voltage measurement, as described in the instruction manual for the instrument.

   After calibration set the indicating instrument to its 3,16 V RMS or 10 V PEAK measurement range.

* 0,5% in the two lower sensitivity settings within each range of the VOLT/UNIT OUT switch, 1% in the two higher settings.

6. Mount the measurement transducer and connect it to one of the two INPUT sockets of the 2626.

   Note: To prevent hum pick-up the INPUT socket not in use must be shielded. The Screening Cover YM 0420, with or without the Microdot Adaptor JP 00228, can be used.

7. Select "Direct" or "Transformer" coupled output, and the corresponding –5% or –3 dB lower frequency limit, using the LOWER FREQ. LIMIT switch. See section 2.1.

8. Set the UPPER FREQ. LIMIT switch to limit the frequency just above the range required for the measurement. Unwanted signals and noise, above the selected frequency, will then be attenuated. See section 2.1.

9. Set the VOLT/UNIT OUT knob to the minimum (0,001) setting.

10. Set the transducer charge sensitivity on the SENSITIVITY pC/UNIT knobs. Start with the most significant digit and ignore the decimal place indication. The transducer charge sensitivity is specified on its calibration chart.

    Note: If the transducer charge sensitivity is less than 1 pC/unit, then convert it to 10^{-1} pC/unit, 10^{-2} pC/unit or 10^{-3} pC/unit, so that the decimal place is immediatly after the most significant digit of the sensitivity value.

    Examples

    With accelerometer sensitivity of 0,0025 pC/ms^{-2}, dial in "2,50" 10^{-3} pC/unit.

    With accelerometer sensitivity of 0,045 pC/g, dial in "4,50" 10^{-2} pC/unit.

    With hydrophone sensitivity of 338 10^{-3} pC/Pa, dial in "3,38" 10^{-1} pC/unit.

11. Set the VOLT/UNIT OUT switch to a range in which one of the LED's, above the the SENSITIVITY pC/UNIT knobs, indicates the correct decimal place for the transducer sensitivity.

12. Apply the input signal.

13. Set the VOLT/UNIT OUT switch (within the selected range) to an output sensitivity setting so that the "20 dB from Overload" (but not the "Overload") LED lights. This gives the best signal-to-noise ratio for measurements.

    Note: If the "20 dB from Overload" LED fails to light, use the highest sensitivity setting in the transducer range selected.

14. If the "Overload" LED lights, and remains lit for more than a few seconds, then turn the VOLT/UNIT OUT switch one position anticlockwise, and press the "RESET" button to restore normal operation.

15. Select a voltage range on the indicating instrument which gives a suitable meter reading without overloading.

The level of the measured signal may now be read from the meter. The signal level L_{FSD}, corresponding to full scale meter deflection, is given by:

$$L_{FSD} = \frac{V_{FSD}}{V_{UO}\ K}$$

where:

V_{FSD} = Voltage range (i.e. voltage for full scale deflection) selected on indicating instrument

V_{UO} = VOLT/UNIT OUT setting selected on 2626
K = 1 when transducer sensitivity is dialed in in pC/unit

or, if transducer sensitivity is less than 1 pC/unit:

$K = 10^{-1}$ when sensitivity dialed-in in 10^{-1} pC/unit
$= 10^{-2}$ when sensitivity dialed-in in 10^{-2} pC/unit
$= 10^{-3}$ when sensitivity dialed-in in 10^{-3} pC/unit

Example: Accelerometer Charge Sensitivity 2,45 pC/ms^{-2}

Using the SENSITIVITY pC/UNIT knobs dial in a sensitivity of "2,45" pC/ms^{-2}, and choose a VOLT/UNIT OUT setting suitable for both measurement and correct decimal place indication. Assuming that a VOLT/UNIT OUT setting of "0,1" is selected, then the acceleration level, corresponding to full scale deflection (3,16 V RMS) on the indicating meter, is given by:

$$L_{FSD} = \frac{V_{FSD}}{V_{UO}\ K}$$

$$= \frac{3{,}16}{0{,}1 \times 1}$$

$$L_{FSD} = 31{,}6\ \text{ms}^{-2}\ \text{RMS}$$

Example: Accelerometer Charge Sensitivity 0,032 pC/ms^{-2}

Using the SENSITIVITY pC/UNIT knobs, dial in a sensitivity of "3,2" pC/ms^{-2}, and choose a VOLT/UNIT OUT setting suitable for both measurement and correct decimal place indication. Assuming that a VOLT/UNIT OUT setting of "1" is selected, then the acceleration level, corresponding to full scale deflection (3,16 V peak) on the indicating meter, is given by:

$$L_{FSD} = \frac{V_{FSD}}{V_{UO}\ K}$$

$$= \frac{3{,}16}{1 \times 10^{-2}}$$

$$L_{FSD} = 316\ \text{g peak}$$

Example: Hydrophone Charge Sensitivity 298 10^{-3} pC/Pa (i.e. 2,98 10^{-1} pC/Pa)

Using the SENSITIVITY pC/UNIT knobs, dial in a sensitivity of "2,98" 10^{-1} pC/Pa, and choose a VOLT/UNIT OUT setting suitable for both measurement and correct decimal place indication. Assuming that a VOLT/UNIT OUT setting of "1" is selected, then the acceleration level, corresponding to full scale deflection (316 mV RMS) on the indicating meter, is given by:

$$L_{FSD} = \frac{V_{FSD}}{V_{UO}\, K}$$

$$= \frac{0,316}{1 \times 10^{-1}}$$

$$L_{FSD} = 3,16\ P_a\ \text{RMS}$$

4. CHARACTERISTICS

4.1. GAIN

The overall gain of the 2626, for various settings of the SENSITIVITY pC/UNIT and VOLT/UNIT OUT controls, is given in Table 4.1.

V/UNIT OUT knob setting			SENSITIVITY knob settings	
"1 – 11" pC/unit	"10 – 110" pC/unit	"100 – 1100" pC/unit	"100" pC/unit	"1000" pC/unit
0,001V/unit	0,01 V/unit	0,1 V/unit	0 dB	–20 dB
0,01	0,1	1	20	0
0,1	1	10	40	20
1	10		60	40

T01351GB0

Table 4.1. Overall gain of the 2626 with 1 nF input source capacitance

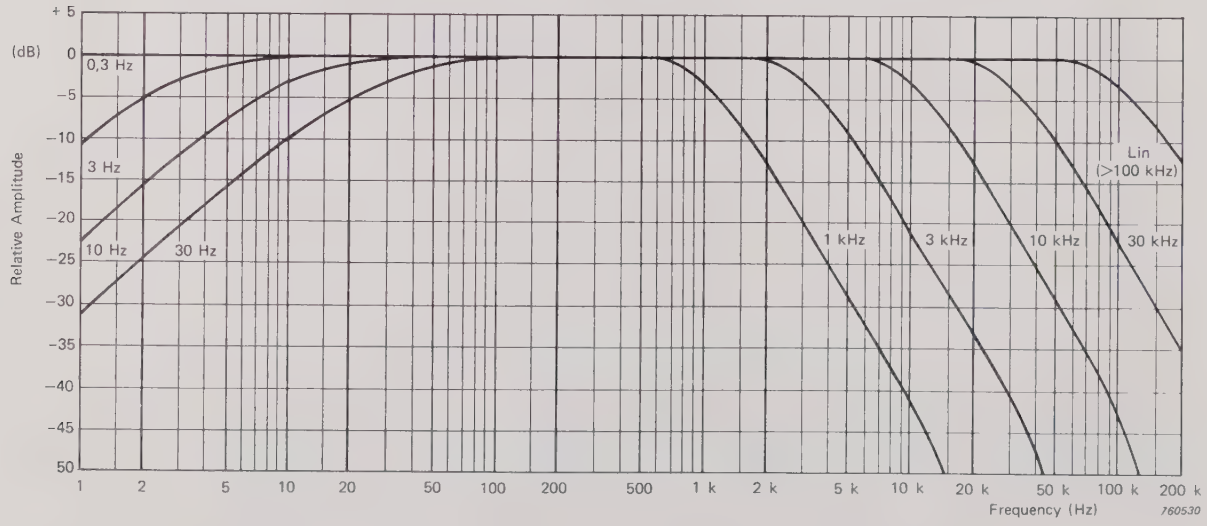


Fig. 4.1. Typical overall frequency characteristics of the 2626

4.2. FREQUENCY AND PHASE

The frequency and phase characteristics of the 2626 are shown in Figs. 4.1 and 4.2 respectively. For most measurements the UPPER and LOWER FREQ. LIMIT switches can be set so that amplitude and phase-shift errors are insignificant. For the measurement of shocks, impulses, or other complex waveforms with a wide range of frequency components, use the 0,3 Hz lower and the Lin. (>100 kHz) upper limits.

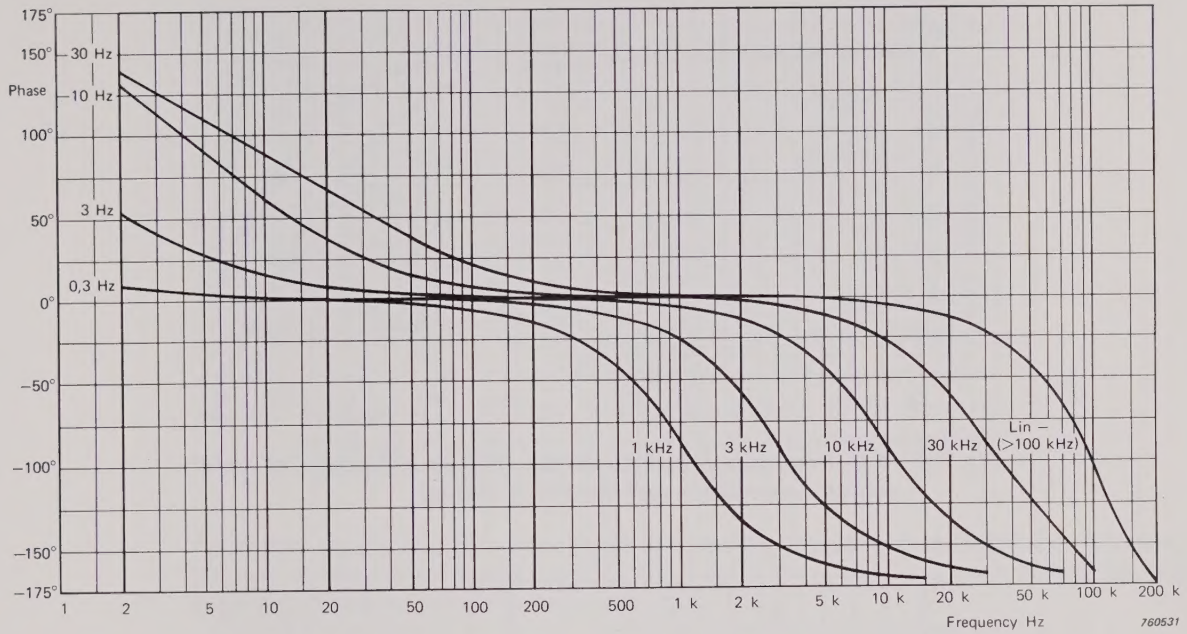


Fig. 4.2. Typical phase characteristics of the 2626

In applications where two 2626's are used, such as the measurement of mechanical mobility, or transducer calibrations with Sensitivity Comparator Type 2970, the maximum phase error can be found using:

$$\tan \Delta\phi = \frac{\frac{f_{c1}}{f_{cn}} - \frac{f_{c2}}{f_{cn}}}{1 + \frac{f_{c1}\, f_{c2}}{f_{cn}^{\,2}}}$$

where f_{c1} and f_{c2} are the individual cut-off frequencies. In the worst case, with the two lowest lower limiting frequencies, where the cut-off frequency may deviate by + 10% the phase difference at $f = 10\, f_c$ is 1°, whilst at $f = 3\, f_c$ it is 3,5°.

4.3. INFLUENCE OF CAPACITATIVE LOADING

Figs. 4.3 and 4.4 show the affect of capacitative loading on the frequency response of the 2626. The maximum lengths of input and output cables which can be used for a particular frequency range can be determined from these curves.

Example: Figs. 4.3 and 4.4 indicate that for measurements at frequencies up to 10 kHz the maximum load capacitance is 50 nF. With miniature low noise cables having a shunt capacitance of 100 pF/m, up to 500 m of input and output cable can be used.

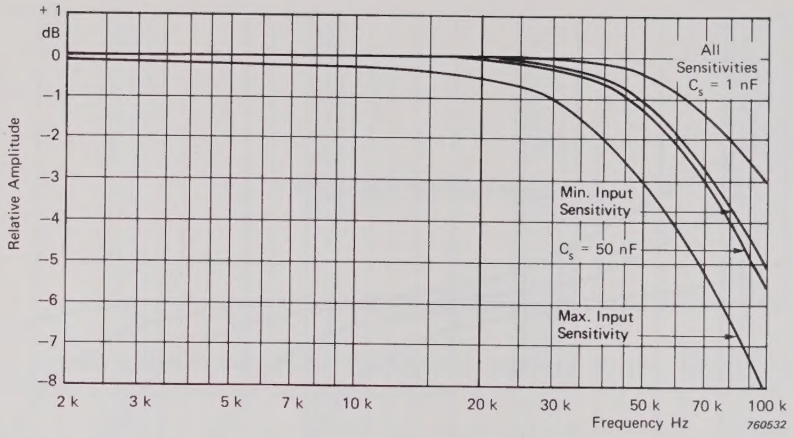


Fig. 4.3. High frequency response of the 2626 as a function of input source capacitance and sensitivity setting

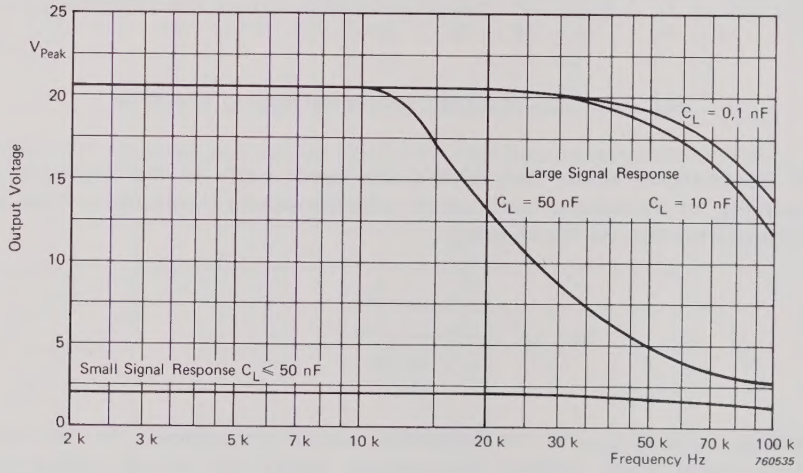


Fig. 4.4. High frequency response of the 2626 as a function of output load capacitance

4.4. NOISE AND DYNAMIC RANGE

A third octave analysis of broadband (2 Hz to 100 kHz) noise produced by the 2626 is shown in Fig. 4.5. This was measured with the amplifier set for maximum sensitivity (1,00 pC/unit — 1 VOLT/unit out), and its input was terminated with a 1 nF capacitor to simulate the capacitance of a transducer.

Over the linear 2 Hz to 22 kHz frequency range the typical output noise level is less than 3 mV. For a maximum output signal level of 7,07 V RMS (10 V peak) this represents a signal-to-noise ratio of over 65 dB. With minimum Amplifier sensitivity (1000 pC/unit — 0,1 VOLT/unit out) the typical output noise level is less than 10 μV, giving a signal to noise ratio of 110 dB.

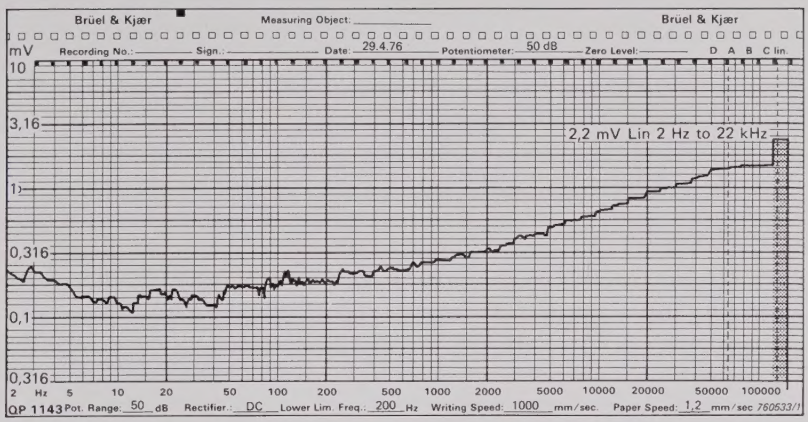

Brüel & Kjær
Measuring Object:
Brüel & Kjær
mV
Recording No.:
Sign.:
Date: 29.4.76
Potentiometer: 50 dB
Zero Level:
D A B C lin.
10
3,16
1
0,316
0,1
0,316
2,2 mV Lin 2 Hz to 22 kHz
2 Hz 5 10 20 50 100 200 500 1000 2000 5000 10000 20000 50000 100000
QP 1143 Pot. Range: 50 dB Rectifier: DC Lower Lim. Freq.: 200 Hz Writing Speed: 1000 mm/sec. Paper Speed: 1,2 mm/sec 760533/1

Fig. 4.5. Third octave spectrum of broadband (2 Hz up to 200 kHz) output noise produced by the 2626 on maximum sensitivity with its input terminated by a 1 nF capacitor

For higher values of input capacitance the amplifier noise level is increased as shown in Fig. 4.6. To maintain a useful signal to noise ratio, therefore, long input cables, with high shunt capacitance, should be used with care.

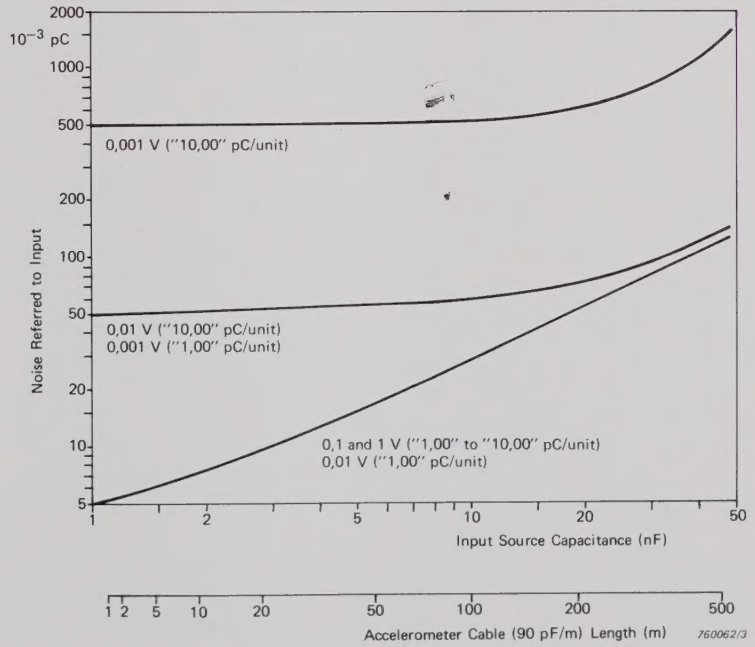


Fig. 4.6. Linear 2 Hz to 22 kHz noise, refered to the 2626 input. As a function of input source capacitance. Transducer capacitance of 1 nF is included

5. SERVICE AND REPAIR

The design and construction of the Conditioning Amplifier Type 2626 ensures that it will maintain its specification, and operate satisfactorily for many years. If a fault occurs, however, which affects either the operation, or safety of the 2626, then disconnect it from the mains and ensure that it cannot be operated unintentionally. For repair consult the separate Service Manual, or contact your local Brüel & Kjær service representative.

Under no circumstances should repair be attempted by persons not qualified in the service of electronic instrumentation.